



STATE OF NEW HAMPSHIRE
DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH SERVICES



2009-10 Influenza Season Summary Report
New Hampshire
October 4, 2009 – May 22, 2010

In New Hampshire (NH), influenza is not a reportable disease, but surveillance systems are in place to help determine the extent of influenza morbidity and mortality in the State. During each influenza season (beginning of October through mid-May), a weekly influenza surveillance report is posted on the NH Department of Health and Human Services' website at the following link: <http://www.dhhs.state.nh.us/DHHS/CDCS/flu-provider.htm>. In addition, a weekly assessment of influenza activity in NH is submitted to the Centers for Disease Control and Prevention for inclusion in the weekly U.S. influenza surveillance report.

This report summarizes outpatient illness surveillance data reported by NH participants in the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) and by the Automated Hospital Emergency Department Data (AHEDD) system, virologic surveillance data from the NH Public Health Laboratories, and pneumonia and influenza mortality data from the NH Division of Vital Records Administration.

Outpatient Illness Surveillance

The two components of outpatient illness surveillance in NH are as follows:

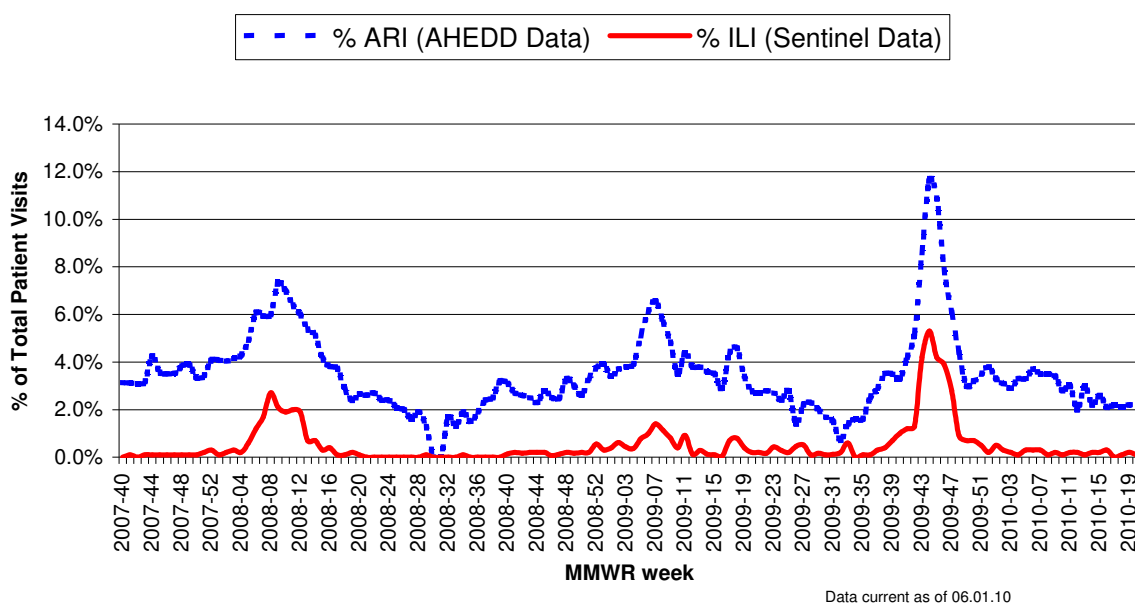
1. U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet): Beginning in 1997, NH has participated in this collaborative effort between the Centers for Disease Control and Prevention, state and local health departments, and health care providers. For the 2009-10 influenza season, 48 NH health care providers participated. Sentinel providers report the proportion of patients who present with influenza-like illness (ILI) on a weekly basis, stratified into five age groups. ILI is defined as 1) a fever and 2) cough and/or sore throat, in the absence of a known cause. Sentinel providers are also asked to collect respiratory specimens from select patients and submit them to the PHL for viral subtyping.
2. The AHEDD system: This system is a collaborative effort between NH acute care hospitals and the NH DHHS. The goal is for all 26 acute care hospitals in the State to participate in this system. At the beginning of the 2009-10 influenza season, 18 hospitals electronically transmitted real-time data from emergency department encounters throughout the day to NH DHHS. Seven more hospitals were added during the season, for a total of 25 hospitals participating by season's end. Chief complaint text within the system is queried for complaints of acute respiratory illness (ARI) in patients seen in emergency departments. While ARI includes encounters that fit the definition of ILI above, it also includes encounters for complaints such as acute bronchitis or otitis media. Please note: Because one of the hospitals reports chief complaint text differently than the other hospitals, ARI encounters for that hospital are not detected by the query tool, and therefore, that hospital's data is not included in Figure 1 below. The query tool is being refined, and the system is being assessed, which is critical as new hospitals are added.

Because these two systems collect information using different methods and represent different patient populations, it is expected that the proportions of ILI and ARI seen in these systems will differ. However, the overall trend of activity is expected to be similar.

In the 2009-10 season, the highest level of ILI activity reported was during MMWR week 44 (week ending Nov 7, 2009) when 5.3% of patient visits to NH ILINet providers were due to ILI and 11.7% of patient encounters in hospital emergency departments reported in the AHEDD system were due to ARI.

ILI and ARI peaked much earlier when compared to the previous two seasons. For example, ARI was observed to peak during MMWR weeks 9 and 7, respectively, for the 2007-08 and 2008-09 influenza seasons. By comparison the 2007-08 and 2008-09 seasons were both milder. For the 2008-09 season ILI and ARI both peaked during week 7 (week ending Feb 21, 2009) at 1.4% and 6.6%, respectively. For the 2007-08 season, ILI peaked at 2.7% during week 8 (week ending Feb 23, 2008) and ARI peaked at 7.3% during week 9 (week ending March 1, 2008). See Figure 1 below for ILI and ARI reported in the past three influenza seasons.

Figure 1: Acute Respiratory Illness (ARI) & Influenza-like Illness (ILI) as a Percentage of Total Patient Visits Reported through the Automated Hospital Emergency Department Data (AHEDD) System & by NH ILINet Providers, 9/30/07 to 5/22/10



Reported Influenza-like Illness (ILI) by Age Group & Practice Type

In the 2009-10 influenza season, persons in the 5 to 24 year age group accounted for the greatest percentage (51%) of patients presenting with ILI reported by NH ILINet providers, followed by the 25 to 49 year age group (24%) and the 0 to 4 year age group (15%) (for purposes of comparison to the previous season the percentage of ILI cases for the 25 to 64 year age group was also computed by collapsing two separate age categories, 25-49 and 50-64 yrs, resulting in 31% of patients presenting with ILI). The distribution of ILI cases looks different compared with ILI reported in the previous season. For example the highest percentage of ILI patients reported in the 2008-09 season occurred in the 25 to 64 year age group (45.1%) followed by the 5 to 24 year age group (40.2%), with the 0 to 4 year age group

comprising just 7.1% of ILI cases. Reported ILI by age groups for the 2009-10 influenza season is shown in Figure 2 and Table 1 below.

Each year there are some changes in NH healthcare providers who participate in the U.S. ILINet System. For the 2009-10 influenza season enrollment was enhanced such that the number of ILINet providers increased to 48 (compared to 35 for the previous season). The distribution of practice types has remained stable. The majority are family practice offices, where people of all ages are seen. Without complete patient population data for all sentinel provider practices, the actual rate of ILI cannot be calculated.

Figure 2: Influenza-like Illness (ILI) by Age Group and Practice Type as Reported by NH ILINet Providers, 2009-10 Influenza Season (10/04/09 – 5/22/10)

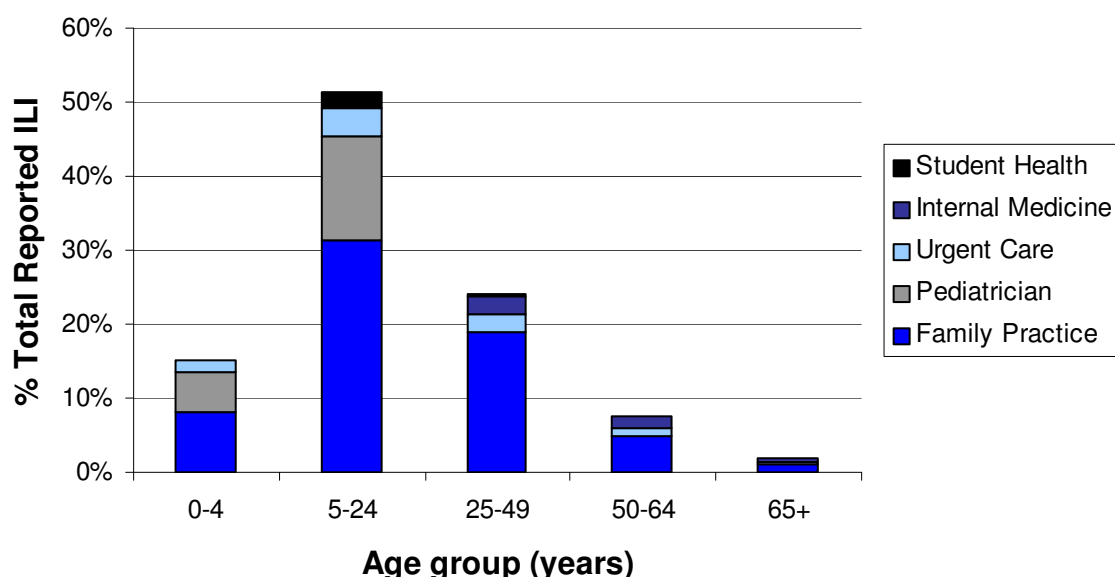


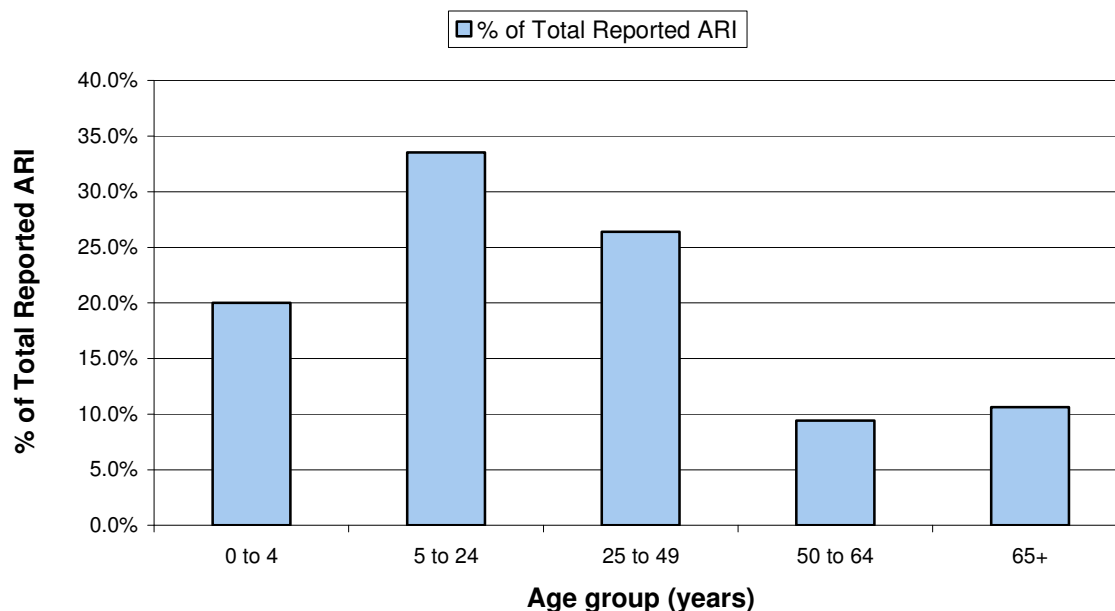
Table 1: Patient Visits for Influenza-like Illness (ILI) by Age Group and Practice Type, NH ILINet Providers, 2009-10 Influenza Season (10/04/09 – 5/22/10)

Practice type	Age Group (years)					Total ILI	Total Patient Visits
	0-4	5-24	25-49	50-64	65+		
Family Practice	141	543	325	86	20	1,115	121,334
Internal Medicine	0	4	42	24	10	80	15,295
Pediatrics	93	242	0	0	0	335	23,253
Student Health	0	35	5	0	0	40	1,308
Urgent Care	29	63	43	19	4	158	1,260
Total	263	887	415	129	34	1,728	162,450

Reported Acute Respiratory Illness (ARI) by Age Group

In the 2009-10 influenza season, persons in the 5 to 24 year age group accounted for the largest percent (33.5%) of all ARI encounters in hospital emergency departments (see Figure 3 below). Persons in the 0 to 4 year age group accounted for 20% of ARI encounters, while persons in the 25 to 49 year age group accounted for 26.4% of ARI encounters.

Figure 3: Acute Respiratory Illness (ARI) by Age Group as Reported by NH Automated Hospital Emergency Department Data (AHEDD) System, 2009-10 Influenza Season (10/04/09 – 5/22/10) (N = 12,908 ARI patients).



Laboratory Surveillance

The NH Public Health Laboratories (PHL) receive respiratory specimens for influenza testing from ILINet providers, as well as other health care providers and hospitals throughout the State. Due to increased demand for testing during the 2009 influenza A (H1N1) pandemic the number of specimens submitted to the PHL for testing was unprecedented. Because of this the only specimens that were accepted by PHL for testing were from persons with ILI who were either hospitalized patients, health care workers, persons suspected of being part of a cluster or outbreak, patients seen by ILINet providers, or pregnant women. Testing is important to identify circulating influenza viral subtypes, and to confirm specimens that test positive by rapid test. Typically, a large majority of specimens submitted to the PHL have previously tested positive by rapid test in health care provider offices or hospital laboratories. Therefore, it is typically expected that a high percent of specimens received by the PHL for influenza testing will be positive. This was demonstrated in the 2008-09 season with 33% (n=511) of the 1,533 specimens submitted testing positive for influenza. By comparison for the 2009-10 season a lower percentage, 23% (n=561) of the 2,417 specimens submitted, tested positive.

During the 2009-10 influenza season, the 2009 influenza A (H1N1) virus comprised nearly all of the total positive isolates in NH (tested by the PHL), as well as in the U.S. For example, in NH 99.8% the positive isolates tested by PHL were 2009 influenza A (H1N1) and 0.2% were influenza B. This is similar to what was reported by other New England states and the U.S. as a whole, which had 99.3% 2009 influenza A (H1N1), 0.1% influenza A(H3), and 0.5% influenza B (of total subtypable specimens). Figures 4 and 5 and Table 2 below further describe influenza testing done by the PHL.

Figure 4: Influenza Virus Isolates, by Viral Subtype, NH Public Health Laboratories, 2009-10 Influenza Season (10/04/09 – 5/22/10) (N = 454)

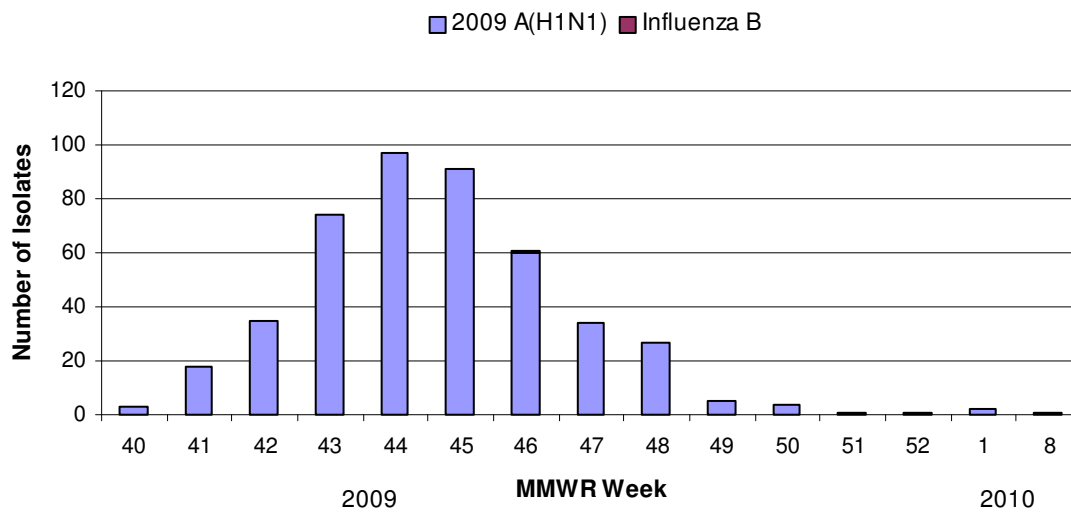


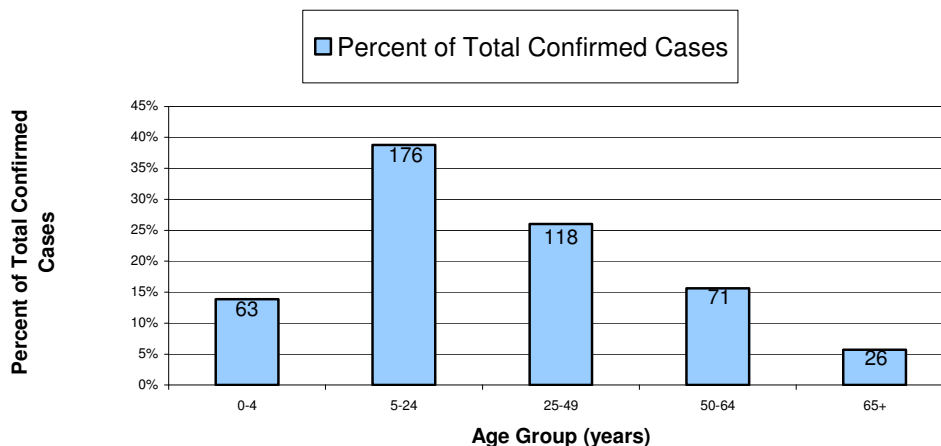
Table 2: Results of Specimens Received by NH Public Health Laboratories, 2009-10 Influenza Season (10/04/09 – 5/22/10)

Results	Number of Specimens	Percent of Influenza Isolates Identified
2009 Influenza A (H1)	453	99.8%
Influenza A (H3)	0	0%
Influenza B	1	0.2%
Negative for influenza*	1848	
Rejected**	99	
Inconclusive	8	
Total	2409	

* Includes specimens positive for Adenovirus (4), Parainfluenza1 (1), Parainfluenza2 (1)

** Sample inadequate for testing

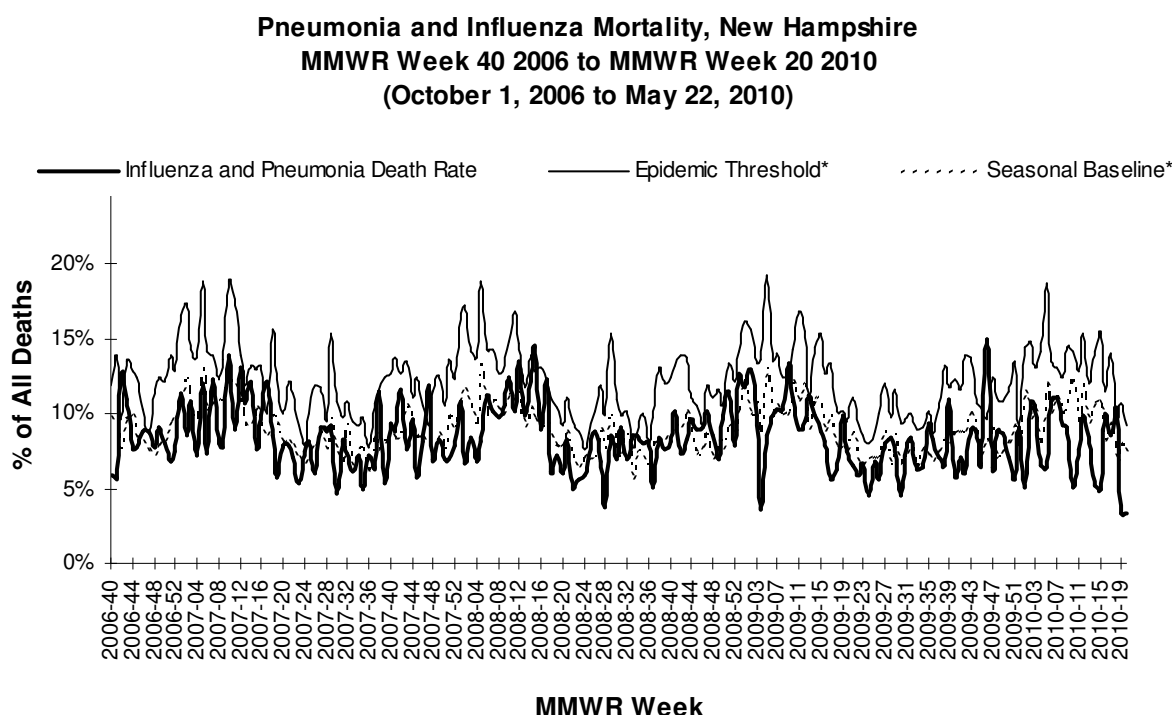
Figure 5: Age Distribution of Laboratory Confirmed Influenza, NH Public Health Laboratories, 2009-10 Influenza Season (10/04/09 – 5/22/10)



Pneumonia & Influenza Mortality

Pneumonia and influenza (P&I) deaths in NH are identified through review of electronically filed death certificates by looking at the causes of death listed on each death certificate. Figure 6 below, which shows the proportion of deaths attributed to P&I, represents all deaths recorded by NH's Division of Vital Records Administration. This includes resident and non-resident deaths that occurred within NH, and may not include deaths of NH residents that occurred out-of-state, or cases being investigated by the Medical Examiner's office.

Figure 6: Pneumonia and Influenza Mortality, New Hampshire, MMWR Week 40 2006 to MMWR Week 20 2010 (10/1/06 – 5/22/10)



*Seasonal baseline is calculated using the previous 5 years of data. If the proportion of P&I deaths for a given week exceeds the baseline value for that week by a statistically significant amount (1.645 standard deviations), then P&I deaths are said to be above the epidemic threshold, and the proportion of deaths above threshold are considered attributable to influenza.

During the 2009-10 influenza season, the percent of all deaths recorded in NH that were reported as due to P&I remained below the weekly epidemic threshold, except for two weeks (MMWR weeks 46 and 18) when P&I deaths were above the threshold (see Table 3 below). Also, during week 52 P&I deaths were equal to the threshold.

Table 3. Percent of Total Reported Deaths in NH Attributed to Pneumonia and Influenza (P&I) Above the Epidemic Threshold by MMWR Week, 2009-10 Influenza Season (10/4/09 – 5/22/10)

MMWR Week	Dates	P&I Deaths (Percent of Total Deaths)	Weekly Epidemic Threshold
2009-46	11/15– 11/21/09	15.0%	9.7%
2009-52	12/27/10– 1/02/10	9.1%	9.1%
2010-18	4/20– 4/26/08	10.3%	9.7%

Influenza Activity as Assessed by State Epidemiologist

Influenza activity levels in NH are reported each week to CDC to be included in the national weekly influenza surveillance report. CDC defines influenza activity levels as follows:

- No Activity: Low ILI activity and no laboratory-confirmed cases of influenza.
- Sporadic: Low ILI activity and isolated laboratory-confirmed influenza cases or a single influenza outbreak has been reported.
- Local: Increased ILI activity or influenza outbreaks in a single region of the state, and recent laboratory-confirmed influenza in that region.
- Regional: Increased ILI activity or influenza outbreaks in ≥ 2 , but less than half of state regions, and recent laboratory-confirmed influenza in affected regions.
- Widespread: Increased ILI activity or influenza outbreaks in at least half of state regions, and recent laboratory-confirmed influenza in the state.

In NH, the reported influenza activity level is based on ILI and ARI reported by the Sentinel Provider and the AHEDD surveillance systems respectively, reports of laboratory confirmed influenza, and reported outbreaks in facilities.

In the 2009-10 season, influenza activity was already widespread at MMWR week 39 due to the arrival of the second wave of the 2009 influenza A(H1N1) pandemic (i.e., before week 40 which is the start of the traditional flu season). Thus elevated activity occurred much earlier compared to recent flu seasons. Activity remained widespread for ten consecutive weeks spanning weeks 40 to 49, then declined to regional activity for weeks 50 and 52. Influenza activity further decreased to local or sporadic activity for weeks 1 through 4, then to no activity for the remainder of the flu season (with exception of week 8, which was sporadic). Therefore, activity dropped to normal much sooner than what is typically seen for traditional flu seasons.

National Surveillance

During the 2009-10 influenza season, influenza activity peaked between mid-October to early November. In comparison with the previous three seasons, the most recent season was generally a higher severity gauging by the percentage of influenza-associated pediatric deaths and the percentage of visits to outpatient clinics for ILI. The overall percentage of deaths due to pneumonia and influenza were slightly higher in comparison to the 2006-07 and 2008-09 seasons, but lower than what was reported for the 2007-08 season.

In the U.S., the predominant circulating strain was the 2009 influenza A (H1N1) virus, with a much smaller number (<1%) of the seasonal A(H1N1), A (H3N2), and B viruses in cocirculation throughout the season. The 2009 influenza A(H1N1) virus was consistently the predominant virus circulating each week. Overall the percent positive viruses detected was highest between weeks 40 and 44, with a steep drop after this period all the way until week 51 or so, at which time the percent positive remained consistently low thereafter.

The Centers for Disease Control and Prevention influenza season summary report can be found on the CDC website at <http://www.cdc.gov/flu/>.

All data in this report are based upon information provided to the New Hampshire Department of Health and Human Services under specific legislative authority. The numbers reported may represent an underestimate of the true absolute number and incidence rate of cases in the state. All population calculations and rates are based on the most recent published estimates by the U.S. Bureau of the Census and the New Hampshire Department of State Planning. Any release of personal identifying information is conditioned upon such information remaining confidential. The unauthorized disclosure of any confidential medical or scientific data is a misdemeanor under New Hampshire law. The department is not responsible for any duplication or misrepresentation of surveillance data released in accordance with this guideline. Data are complete as of 08/27/10.